

# COLLABORATION FOR ACCIDENT PREVENTION & INJURY CONTROL

## PROPOSALS FOR INJURY PREVENTION IN WALES MARCH 2002

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# 1. INTRODUCTION

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Injuries and their consequences constitute a major health problem in Wales. Unlike many other health problems, effective preventive measures can make a substantial impact in the short term. The purpose of this document is to raise awareness of the size of the injury problem in Wales, list the wide range of proven interventions, describe the current situation with respect to prevention and to make proposals for substantially enhancing our capacity to reduce the occurrence and impact of injuries in Wales.

This document has been written by members of the Collaboration in Accident Prevention and Injury Control (CAPIC), a virtual Wales Injury Prevention Network, with the support of the Welsh Assembly Government.

The Collaboration commends this document for consideration by the Welsh Assembly Government.

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## 2. INJURIES – THE SIZE OF THE PROBLEM IN WALES

### 2.1. Introduction

Physical injury occurs when an external force applied to the body exceeds the threshold of physiological tolerance and tissue damage results. Injuries can occur from overexposure to any type of energy e.g. mechanical, thermal, electrical, chemical or radiant.

Injuries are extremely common; there is nobody alive who has never suffered an injury. Injury severity ranges from the trivial e.g. unnoticed bruising, to a major cause of health service utilisation, disability and death. This report will focus on injuries which are sufficiently severe to be brought to medical attention. The magnitude of the injury problem will be described in terms of deaths, hospital admissions, accident and emergency attendances, and disability. Wherever possible Welsh data and data services have been used.

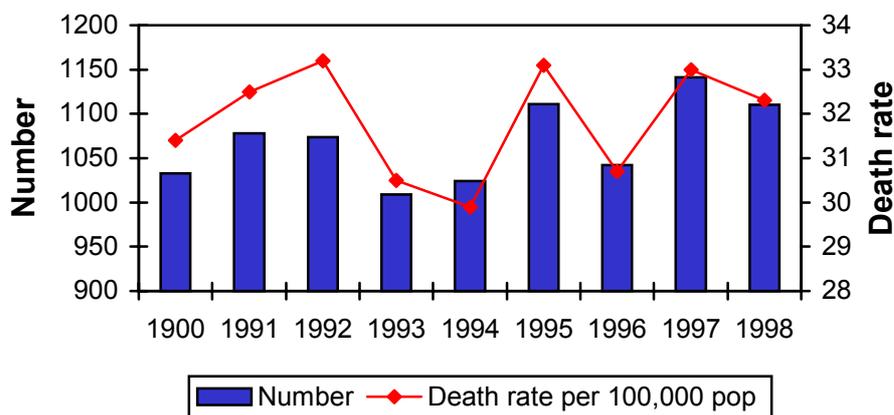
The largest inequalities in health occur in childhood injuries. This report will deal with variations in injury rates across all age groups in both affluent and deprived communities across Wales.

Finally, injury prevention is a multi-agency activity. This report includes data on injuries and risk situations collected by the police and fire service, which substantially augment the data from the National Health Service and Office of National Statistics.

### 2.2. Mortality Data

Each year about 1,100 people in Wales die as a direct result of an injury. Figure 1 shows the death rate from all injuries in Wales from 1990 - 1998. After a considerable reduction in the 1970 and 1980, death rates would seem to have stabilised.

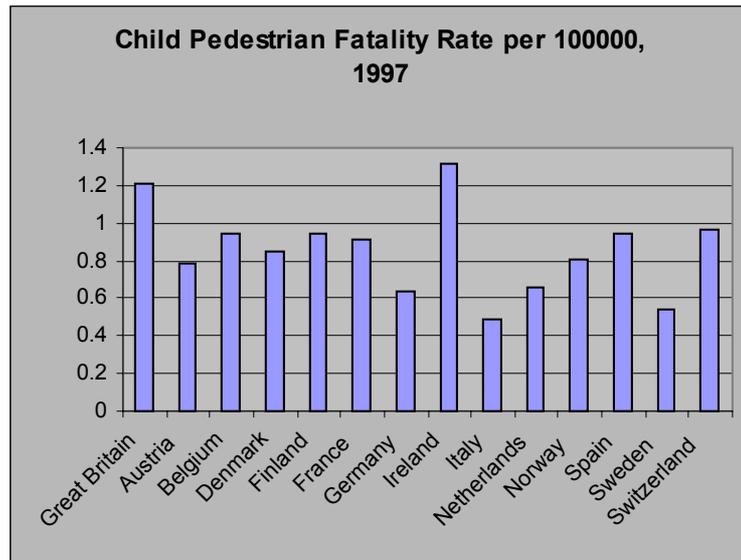
**Fig 1:** Number and death rate from all injury causes in Wales 1990-1998  
Source: Health Show 2000. Health Solutions Wales



Considering overall injury mortality rates, Wales does quite well in the international setting. Figure 2 (page 4), shows standardised death rates from injury for all the European Union and selected other countries 1997-1999.

However for selected causes the situation in Wales is far less satisfactory. Figure 3 shows death rates for pedestrians across European countries.

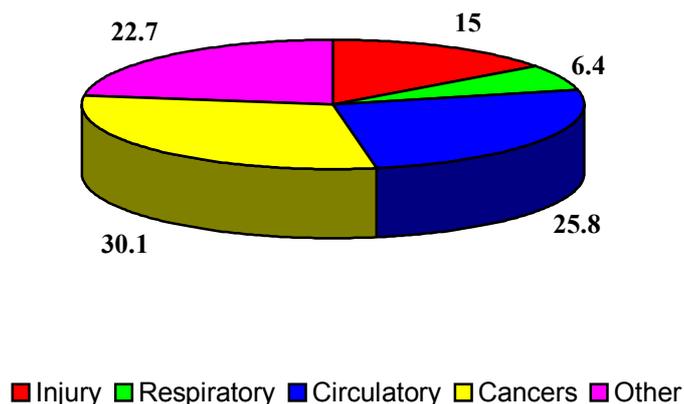
**Fig 3:** Death rates for pedestrians across European countries<sup>1</sup>



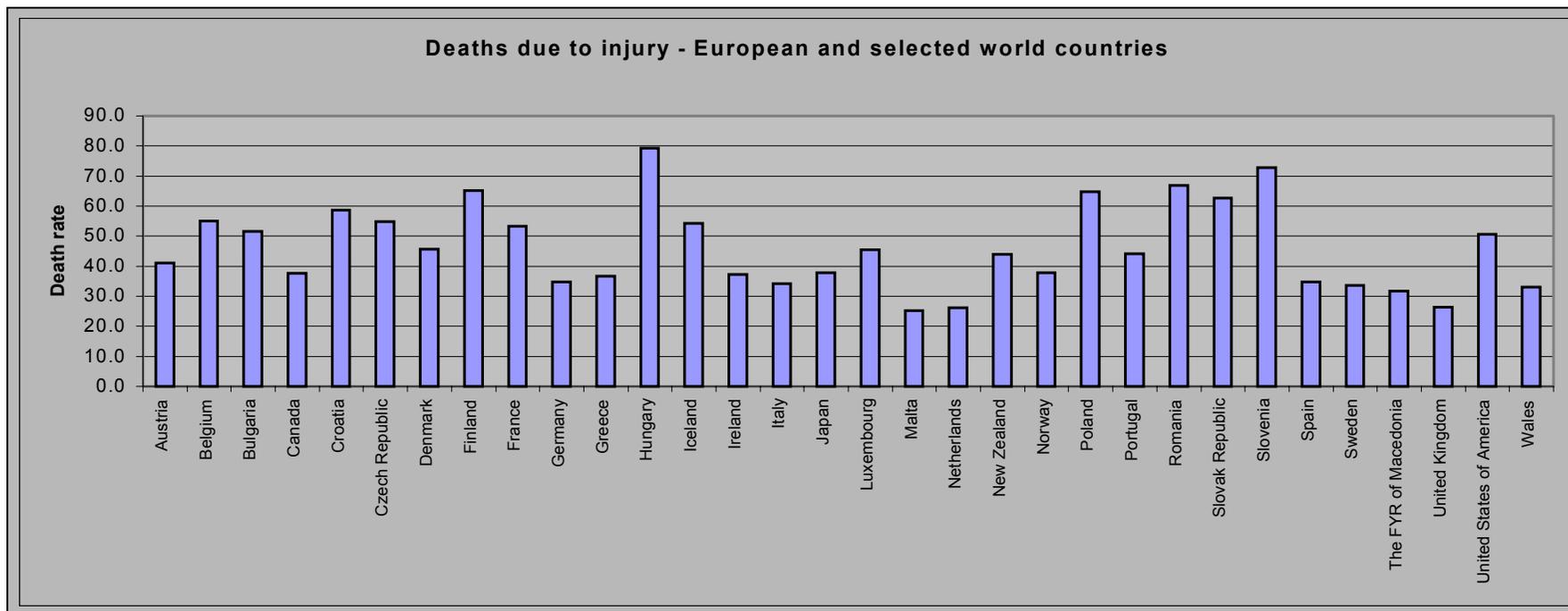
Death rates and numbers tell only one part of the story.<sup>2</sup> As injury related deaths account for only 3.3% of deaths in Wales the problem may not seem to be large. However, many injury related deaths occur early in life and many life years are lost.

Figure 4 shows the number of years of life lost before the age of 75 in Wales from the major causes of death<sup>3</sup>. Clearly this measure shows deaths from injury to have a five-fold greater health impact than the crude number would suggest.

**Fig 4:** Potential years of life lost before age 75 in Wales, (%) 1998  
Source: Health Show 2000. Health Solution Wales

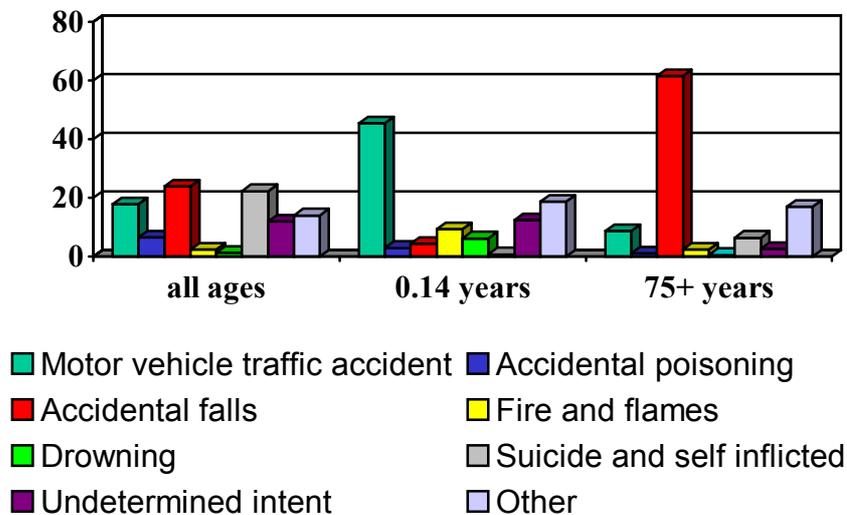


**Fig 2:** World Health Statistics Annual 1997-1999 (online edition)



Injuries that result in deaths can be caused by a variety of factors and situations, which will vary by age group. Figure 5 shows the major causes of injury death in England and Wales for all ages and with specific reference to those aged 0-14 years and 75 years and older. Road traffic accidents in childhood, falls in the elderly, and suicide at all ages, are three of the major factors. The true extent of deaths from falls in older people is substantially greater than is shown here, as many delayed deaths are coded to other causes (see also section 2.7).

**Fig 5:** Percentage Distribution of injury related causes of death by age group England and Wales, 1998.



Source: Health Show 2000. Health Solution Wales

### 2.3. Hospital Admission Data

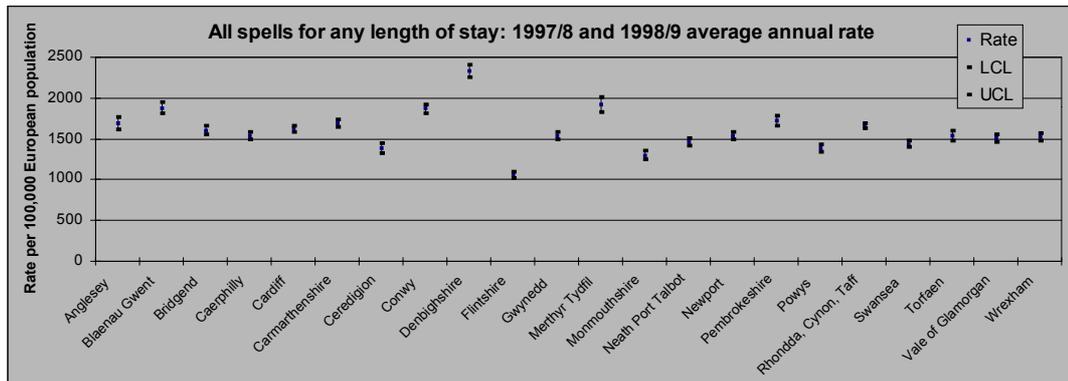
Information on the reason for hospital admissions can be obtained from the Patient Episode Database for Wales (PEDW). The data used in this report comes from an analysis of the 1997-1999 (2 years) PEDW data carried out by members of the Public Health Information and Epidemiology (PIE) Group.

Multiple factors impinge on whether a person with an injury of a certain severity is admitted to hospital. For instance, all unconscious head injuries or hip fracture patients will be admitted but for less severe injuries, the extent of social support, bed availability, and service access issues can play a major part. In such circumstances comparisons between areas can be misleading, and analyses which correct for most of these factors, e.g. three plus day admissions, can be better for area based comparisons.

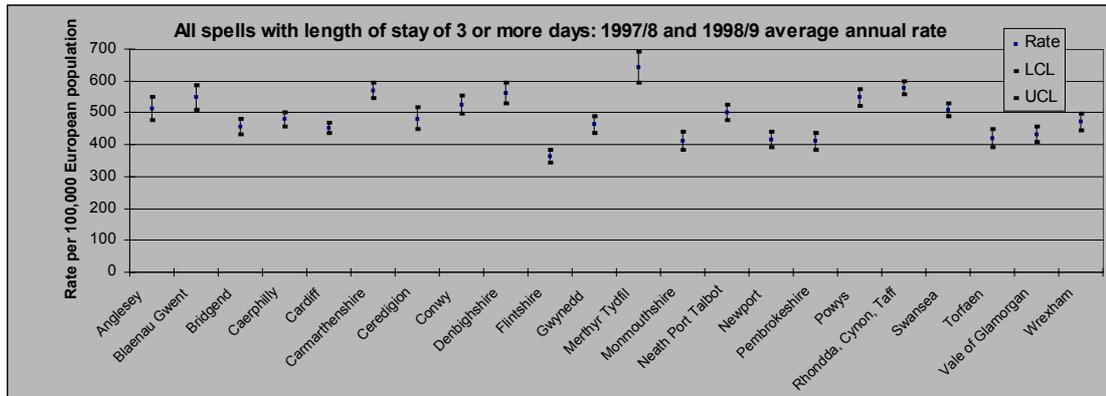
However, given the pace of clinical change there is probably no single indicator of injury, which is completely stable over time. This is not to say that injury indicators should not be used but that when used the impact of service and clinical changes should also be considered.

Figures 6 & 7 show discharge rates from hospital for Welsh residents by local authority, for all lengths of stay and those where people spent at least three days in hospital. Three days plus admissions are a better indicator of severe injuries and are less affected by bed availability and admissions policies.

**Fig 6:** Death and discharge rate for all types of injury by local authority area across Wales based on all admissions



**Fig 7:** Death and discharge rate for all types of injury by local authority area across Wales based on admissions lasting three or more days



## 2.4. The All Wales Injury Surveillance System

The All Wales Injuries Surveillance System (AWISS) is a population-based system that currently covers around 80% of the Welsh population and is one of the few such systems operating anywhere in the world. AWISS collates A and E attendance data that are then used in the development and monitoring of injury prevention efforts.

It has already been used to carry out and support numerous high quality interventions and research projects, the results of which have been presented to the international research community and promoted the position of Wales. On-going projects include:-

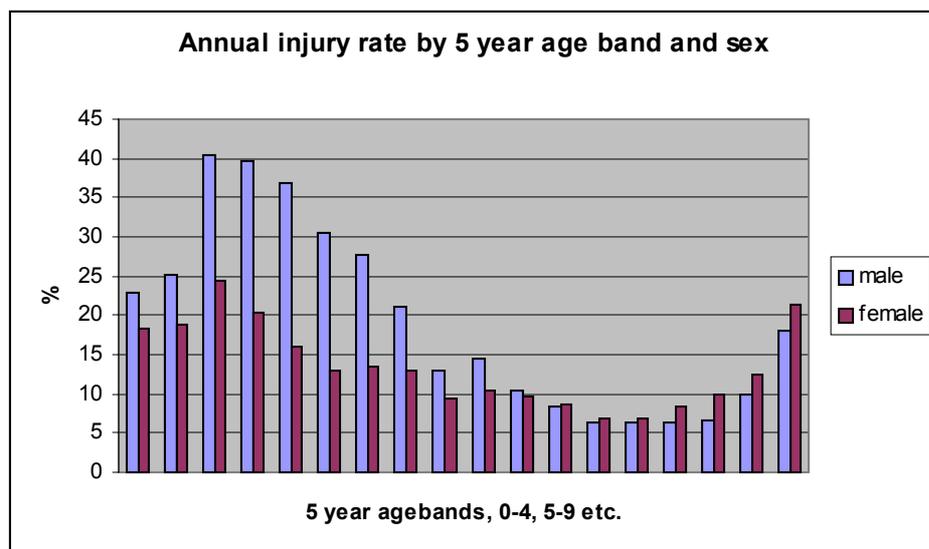
- An evaluation of the contribution of the 'scrum-cap' to head injuries amongst rugby players (South Wales)
- A trial of the effectiveness of Vitamin D in preventing hip fractures to care home residents (All Wales)
- A study of the contribution of deprivation to fracture rates (All Wales)
- An analysis of the contribution of the home environment to injury risk in Neath Port Talbot as part of the Housing and Neighbourhood and Health (HANAH) study
- An analysis of the relationship between housing type and the occurrence of domestic fires
- Comparison of fracture rates in Welsh and European children.

AWISS was only established in 1996, but has already developed a reputation alongside that of the more established systems across Europe, North America and Australia. Members of the AWISS team represent the UK in several European Union funded injury prevention projects. However, significant gaps in the dataset do exist. Although AWISS has the backing of clinicians in every A and E department in Wales, and those that treat Welsh residents in England, some hospitals in Wales are unable to provide a regular data download. This situation hinders injury prevention efforts and can only be improved if the provision of data becomes mandated at an All Wales level, as is the case with in-patient data.

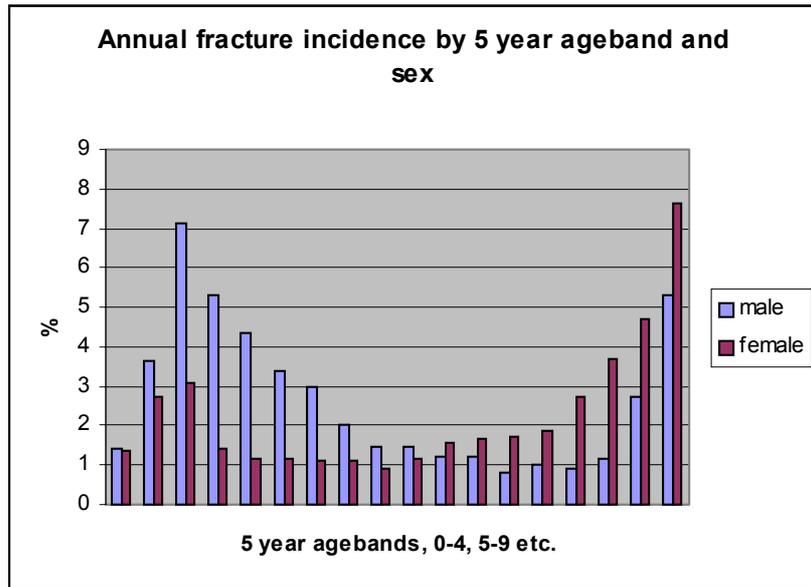
The following analyses are based on an area of South Wales where there is complete AWISS coverage. Figure 7 shows the annual attendance rate (as a percentage of the population) for all injuries at accident and emergency departments by five year age and sex groupings. Figure 8 shows the same analysis, but this time limited to fractures. Analysis of the attendance rates by distance from home shows that in South Wales there is a 50% decline over a ten mile radius for all injuries.<sup>4</sup> No such decline exists for fractures. Fracture incidence is a better indicator of injury incidence than total attendance.

A comparative study of childhood fractures in south Wales and European districts in 1996 showed that, on average, Welsh children are twice as likely to break a bone by the age of 15 as their Scandinavian counterparts.<sup>5</sup> In Wales, two thirds of boys and four in every ten girls will have suffered a fracture by the time they are 15.

**Fig 8:** Annual Injury Rate by 5 Year Age band and Sex



**Fig 9:** Annual Fracture Incidence by 5 Year Age Band and Sex



## 2.5. Road Traffic Accident (RTA) Police Data

Road traffic accidents are a significant cause of morbidity and mortality in Wales. The accidents, and their consequences, place both an immediate and long term burden upon the NHS.

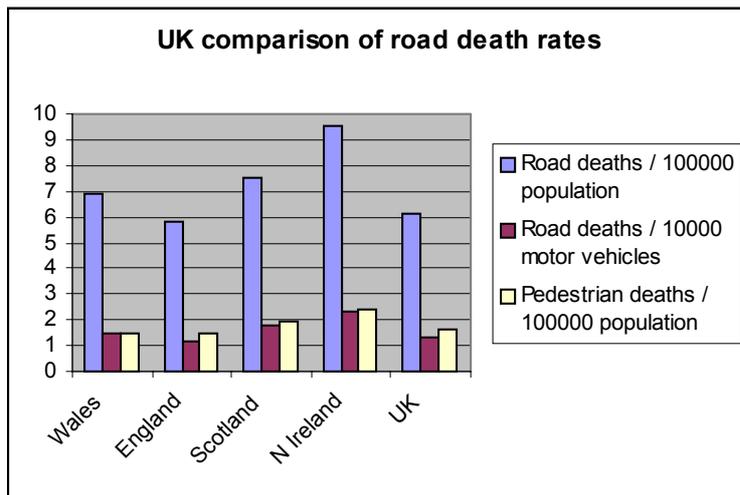
Achieving reductions in the RTA burden requires the co-operation of a diverse group of individuals, for example, clinicians, police forces, local authorities and voluntary groups, and measures ranging from educational and behavioural e.g. road crossing safety, to legislation and enforcement e.g. seat belts and speed cameras, and environmental adaptation e.g. speed bumps, and home zones.

Current initiatives being undertaken in Wales include two Speed Reduction partnerships; one covering the Gwent, South Wales and Dyfed Powys police forces in the south and the other covering the North Wales police force. These aim to reduce the RTA casualty burden by speed camera led enforcement of speed limits at known accident blackspots. Evaluation of the effectiveness of the Southern Wales project is being undertaken by CAPIC using the police Stats 19 dataset, the All Wales Injury Surveillance System (AWISS) and Patient Episode Database Wales (PEDW). The structure of this partnership has led to it being identified as a model of good practice, recommended across the rest of the UK.

The Stats 19 dataset is very valuable and includes a grid reference of each RTA involving at least one casualty and to which the police are called. Mapping RTA locations is useful in analysing the locations of events and testing the effectiveness of interventions. However, the police are not called to all RTAs that result in an injury and additional data from ambulance, accident and emergency and in-patient services are crucial to a complete evaluation.

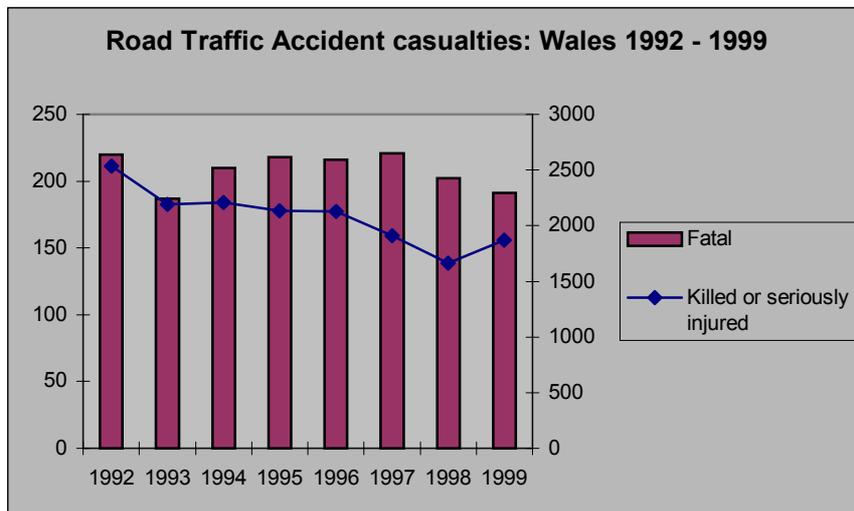
In Wales, in 1999, 191 people were killed and 14,156 injured on our roads. In comparison with the rest of the UK (figure 9), Welsh death rates are higher than those in England but lower than both Scotland and Northern Ireland.

**Fig 10:** Comparison of road death rates across the UK.  
Source: Road Accidents Great Britain 1999.<sup>6</sup>



During the 1990s, the number of RTA fatalities have fluctuated considerably. In 1999, RTA deaths (191 deaths) were at their lowest since 1994 (187 deaths) (figure10), but sustaining this drop and achieving further reductions is a major challenge. With the current lifetime risk of being injured in an RTA in Wales being around 1 in 3, and current cost estimates of £1.26 million per fatality, £146,890 per serious injury and £14,540 per slight injury, the potential benefits to individuals and society of reduced numbers and severity of RTAs are considerable.

**Fig 11:** The Number of road traffic accident casualties: Wales 1992-9.  
Source: Road Accidents Great Britain 1999<sup>6</sup>.



## **2.6. Fire Service House Fire Data**

Fire related injuries are an often avoidable cause of morbidity and mortality and research into the prevention of such injuries is one of the most advanced areas of injury prevention overall. However, death and disability still regularly occur in Wales as a result of domestic fires.

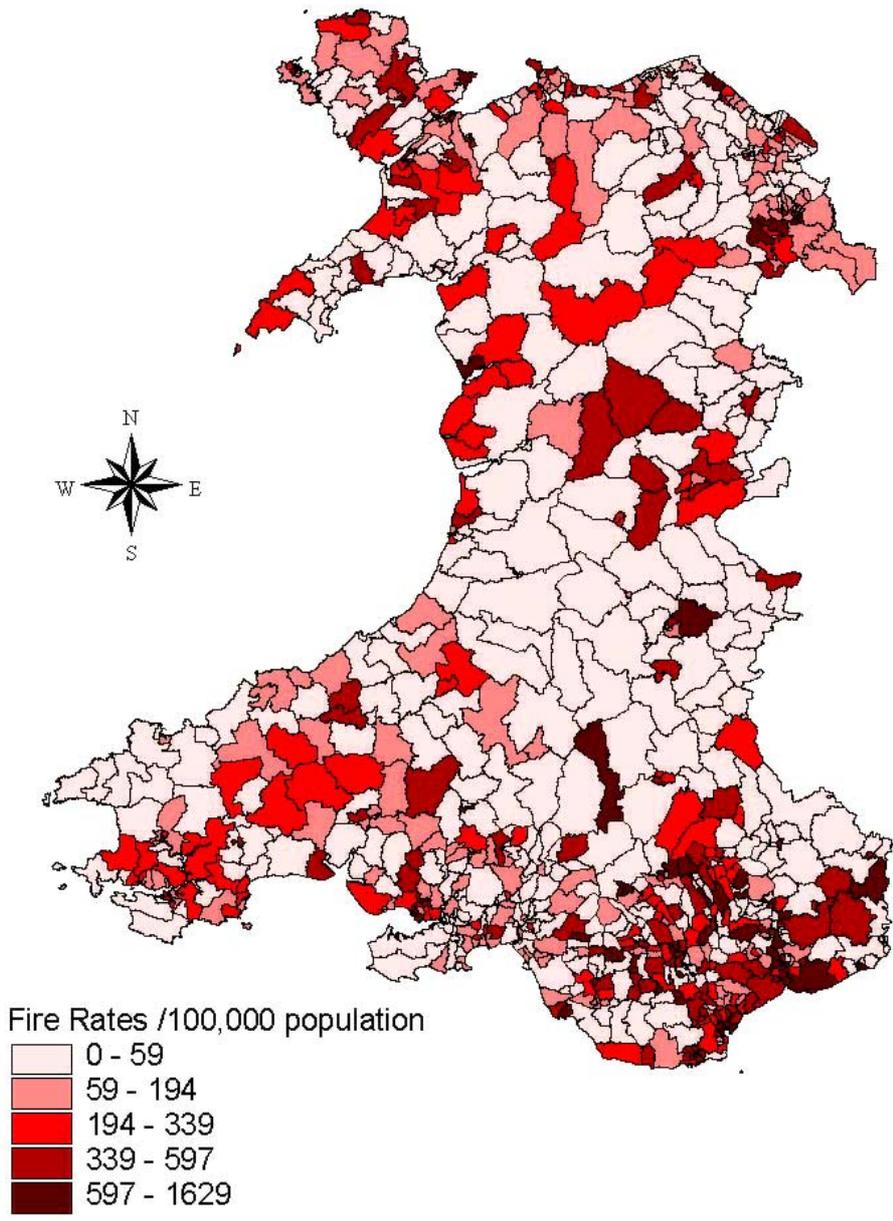
In 1999, the three fire services in Wales were called to 3,322 domestic fires, which resulted in 18 deaths and 820 non-fatal casualties. These figures are a particular cause for concern because of the substantial deprivation gradients in fire related injuries that exist across Wales

Mapping the incidence of domestic fires by electoral division across Wales (figure 12) and grouping the electoral divisions into fifths by deprivation shows that the most deprived fifth of wards has five times the domestic fire rate than the most affluent fifth (see also figure 21).

In 2000, there were 3,344 domestic fires. Of these, just 44% were in properties with fire detection equipment. However, even where such equipment was in place, it was not operational in over one quarter of homes. Misuse, for example, the removal of batteries for use elsewhere, is believed to be a particular problem in more deprived homes.<sup>7</sup> While addressing the causes of these fires is a more complex issue, more widespread use of mains powered alarms may help to address the problem of operational failure.

Fig: 12

**Domestic Fire Rates by Electoral Ward,  
Wales, 01/04/98 - 31/03/99**



Source: FDR-1 Database – Welsh Fire Services

## 2.7. Fractures – A Serious Cause of Morbidity and Mortality

Each year around 2% of the population of Wales suffer a fracture. This amounts to about 62,000 fractures in total. Many of these affect children and young men, but a quarter affect older people, predominantly women, aged over 50.<sup>8</sup>

The majority of fractures in older people follow minor trauma and are a result of osteoporosis.<sup>9</sup>

Hip fracture is a significant problem and affects the frailest older people in the population. People in care homes are nearly 10 times more likely to sustain a hip fracture compared to the general elderly population.<sup>10</sup> In total there are around 4,200 hip fractures each year in Wales.<sup>8</sup>

Hip fracture can be devastating to the individual – about one quarter of people with such fractures die within six months of the injury and half of survivors fail to gain their previous independence. Many of these people will need long term hospital, residential or nursing home care.

Many of the deaths that occur are from complications of the fracture and hospitalisation (e.g. pneumonia) so that the death is coded as resulting from cardio respiratory disease rather than being attributed to the injury. This will lead to underestimation of the true number of injury related deaths.

The average length of hospital stay in Wales for a patient with a hip fracture is five weeks, but can be as long as six months. This prolonged length of hospital stay explains the average cost of £7,000 per patient with hip fracture. However, this cost is dwarfed by the cost of aftercare which can be on average £13,000 – reflecting the high cost of care for those people who make a poor recovery and need placement in long term residential and nursing home care.<sup>11</sup>

The total cost of £20,000 for a hip fracture translates to a total of £84 million per year for health and social services in Wales. At any one time, patients recovering from hip fracture occupy 400 hospital beds in Wales – the equivalent of a moderately sized district general hospital.<sup>12</sup>

Sports and leisure activities also contribute to a considerable number of fractures in the children and young adults.

A recent study of fractures in the child population of Swansea<sup>13</sup> shows that sports and leisure activities accounted for 36% of the fractures presenting in accident and emergency departments. Ball and wheel sports accounted for the majority of injuries, soccer being the most common individual activity resulting in wrist fractures. Cycling accounted for the majority of fractures due to wheeled sports with roller-skating and skateboarding accounting for most of the rest. Fractures of the radius and the ulna were the most frequent injury reported. 45% of the fractures occurring in schools happened in the playground with children running and falling onto hard surfaces.

## 2.8. Socioeconomic Variations in Injury

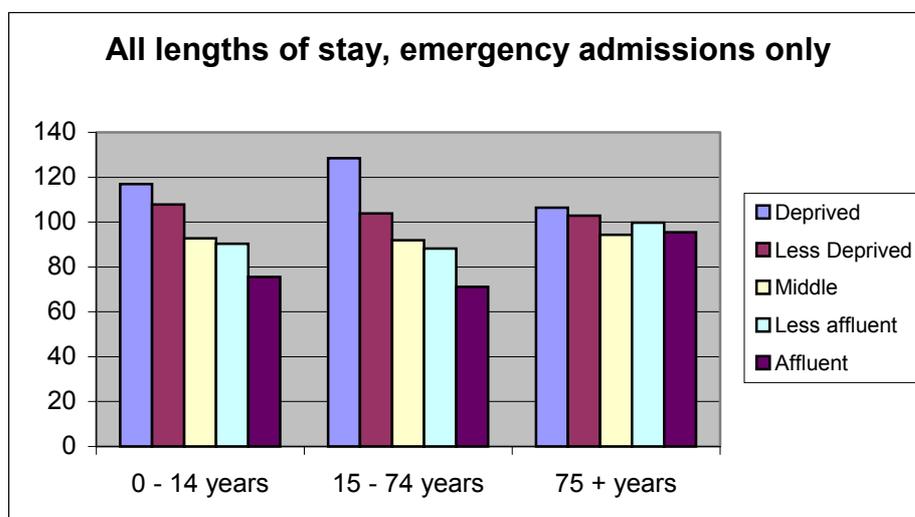
The greatest difference between the affluent and deprived sectors of society is in childhood injury mortality rates. Based on an analysis of deaths by parental occupation and social class in England and Wales in 1989 – 1992 Roberts and Power<sup>14</sup> showed that children from social Class V (most deprived) had five times the overall deaths rate from injury than those from social Class I (most affluent). For motor vehicle accidents the ratio was 4.2, for pedestrian accidents it was 5.1 and for deaths caused by fire and flames it was 14.6.

This type of analysis is very helpful but its utility has been diminished by the growth in single parent families (now more difficult to classify children by social class) and the fact that it is difficult to use social class to target interventions. People do not go about with their social class stamped on their foreheads.

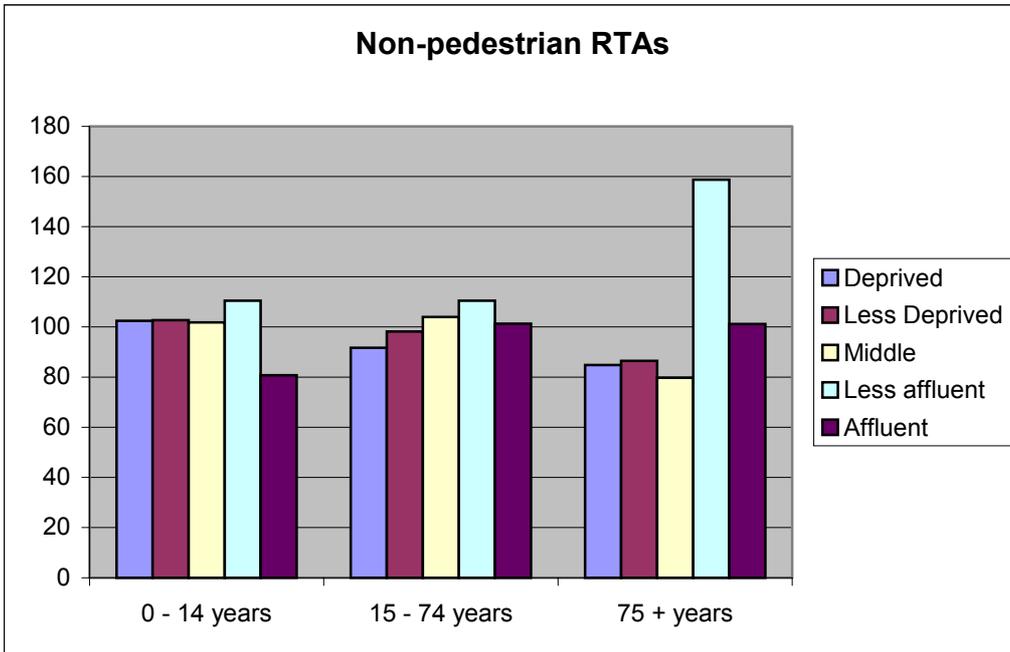
As it is easier to focus interventions on entire populations in deprived communities and schools an area based approach to targeting interventions is favoured in Wales.

The following analyses are based on dividing Wales into the 865 electoral divisions (edivs) in existence in 1998 and grouping these into five equal groups based on the Townsend Index of Deprivation. Comparisons are then made by each fifth of affluence/deprivation, compared to the All Wales average, which is standardised to 100 in each case. The following tables/figures show the standardised hospital discharge ratios by fifths of deprivation for all injury discharges and for specific causes for all ages, children and older people.

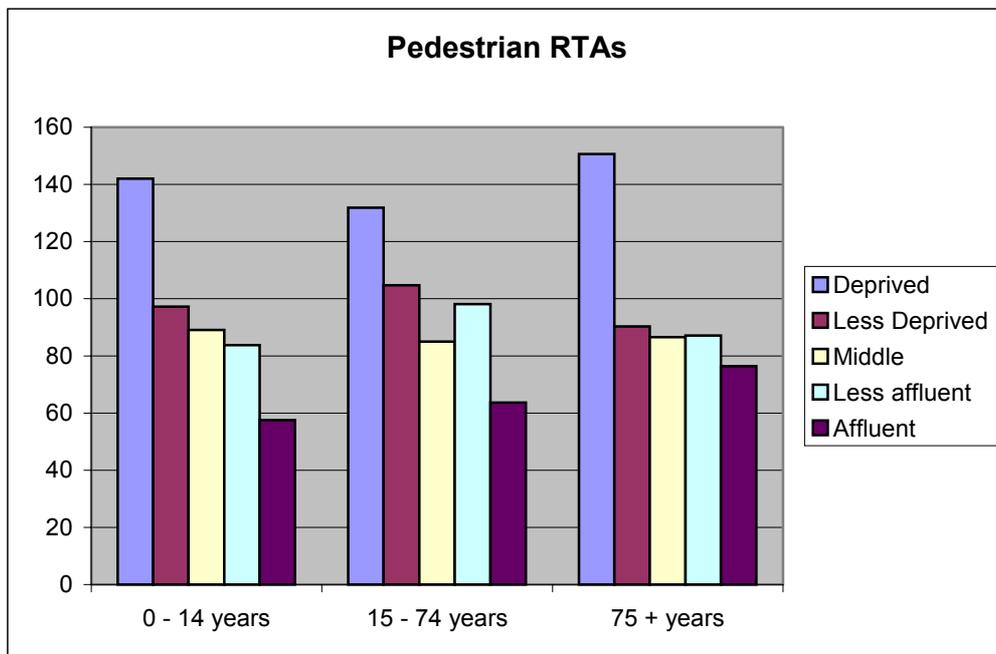
**Fig 13:** All emergency admissions PEDW 1997/98 and 1998/99, by age group



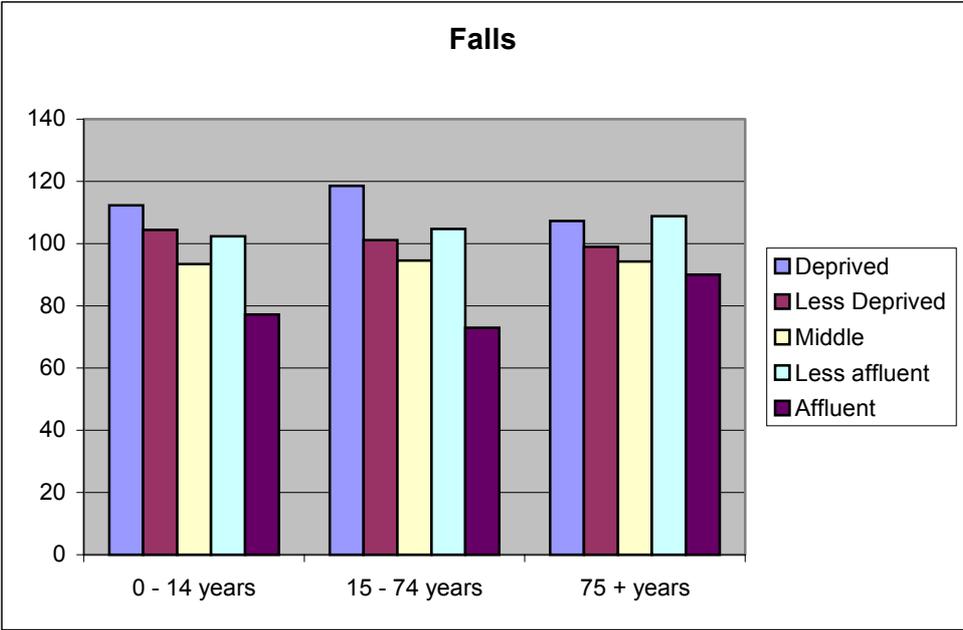
**Fig 14: Non Pedestrian Road Traffic Accidents (RTAs):**  
PEDW 1997/98 and 1998/99, by age group



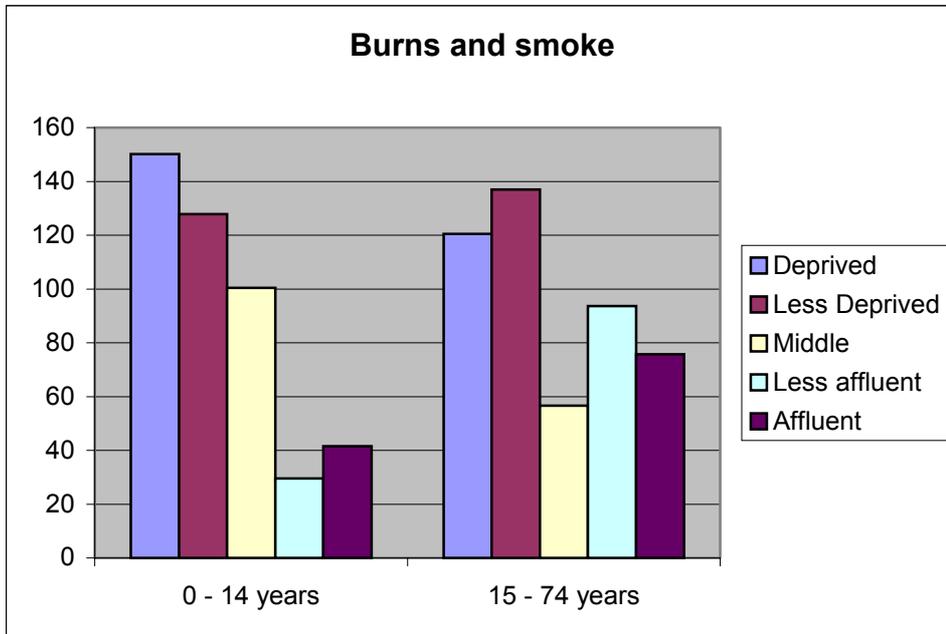
**Fig 15: Pedestrian Road Traffic Accidents (RTAs):**  
PEDW 1997/98 and 1998/99, by age group



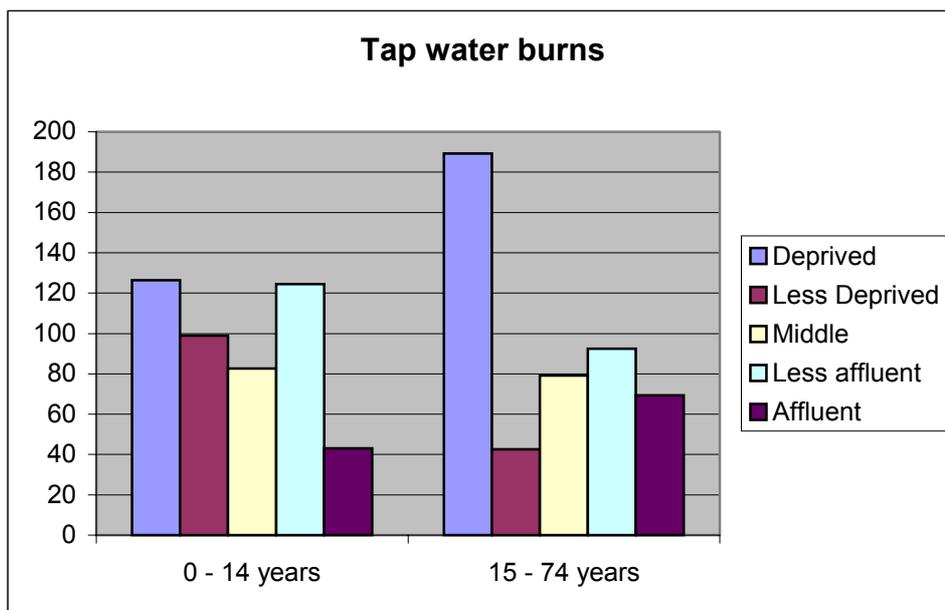
**Fig 16:** Falls: PEDW 1997/98 and 1998/99, by age group



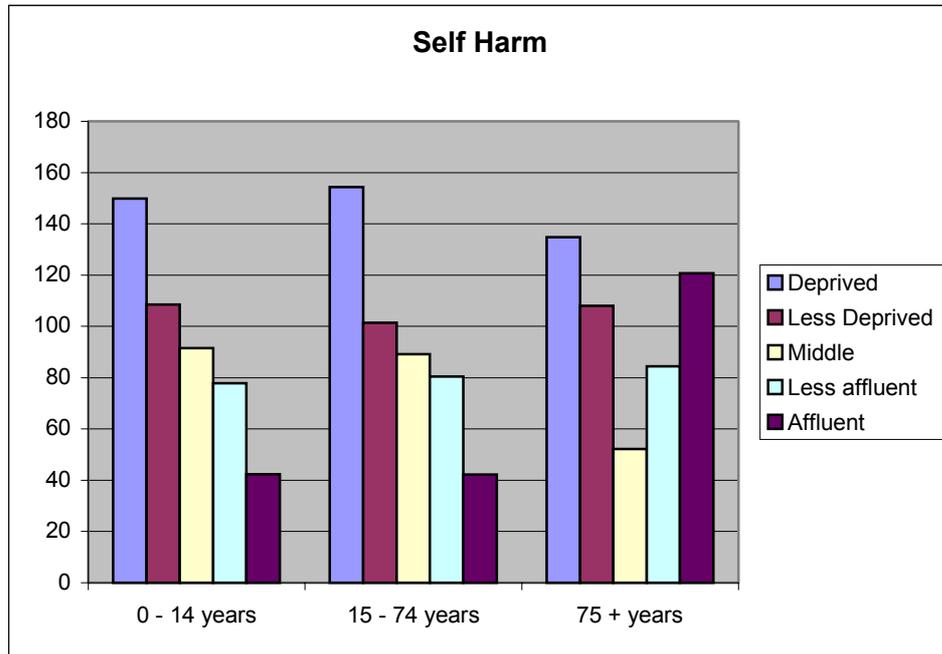
**Fig 17: Burns & Smoke Inhalation: PEDW:1997/98 and 1998/99, by age group**



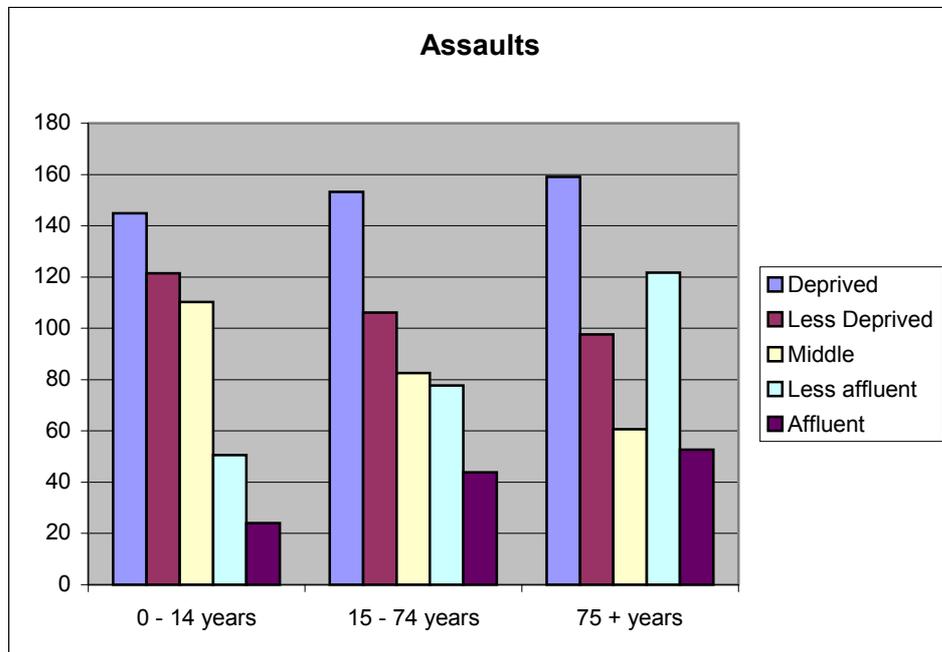
**Fig 18: Tap Water Burns: PEDW 1997/98 and 1998/99, by age group**



**Fig 19:** All injuries as a result of self harm: PEDW: 1997/98 and 1998/99, by age group.



**Fig 20:** All injuries as a result of assault: PEDW 1997/98 and 1998/99, by age group.



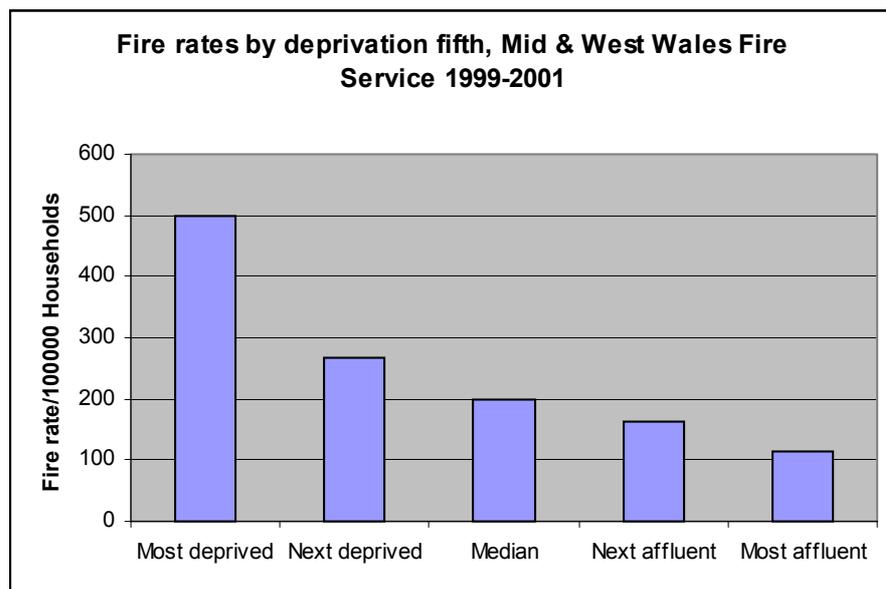
The above data confirms:

- a strong direct correlation between social deprivation and injuries across all age groups.
- Pedestrian injuries and assaults in all age groups are of concern.

- Burns and scalds are significantly high in socially deprived areas.
- The link with social deprivation is not evident for falls and non pedestrian RTA's.

Analysis by electoral division demonstrated in figure 21, shows that people living in the most deprived areas are 5 times more likely to suffer a fire related injury than those in the more affluent areas.

**Figure: 21:** Fire rates by deprivation fifth.  
Source: FDR-1 Database. Mid & West Wales Fire Service



The reasons for this socio-economic gradient are wide ranging, but more disadvantaged individuals are believed to be at greater risk from a wider range of potential causes. Members of CAPIC are collaborating with the three fire services across Wales to analyse factors that might explain the higher rate of domestic fires in the more disadvantaged areas. It is hoped that these analyses will highlight particular areas for the targeted evaluation of fire prevention initiatives.

## 3. INJURY PREVENTION IN WALES

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### 3.1. Introduction

In 1999, Better Health Better Wales set injury prevention as a clear priority for the 21st Century.

*"To reduce the European Standardised mortality rate for accidents, for all ages, by at least 15% by 2002 (from 20.7 per 100,000 in 1995 to no more than 17.6)".<sup>15</sup>*

Injury prevention is an important issue for a broad range of agencies across Wales. The effects of serious injury not only incurs considerable long term psychological and financial costs to the individual and their family but it also places significant costs on statutory services in terms of health, education and social care.

The current National Health Promotion Strategy for Wales<sup>15</sup> sets out the Assembly's strategic vision for Wales over the next decade. One of the five strategic priorities is to improve and reduce inequalities in health by using a co-ordinated approach. The reduction of accidents and injury is one of a number of health promotion issues listed for action.

There are already a number of agencies in Wales who play a key role in injury prevention. These agencies, in partnership with others, are taking a targeted approach to reduce injuries across all age groups.

### 3.2. A Multi Agency Focus for Injury Prevention

The National Assembly is encouraging a co-ordinated multiagency approach to reducing injuries in Wales by supporting the development of the Collaboration for Accident Prevention & Injury Control (CAPIC). The collaboration consists of representatives from:

- The All Wales Injury Surveillance System
- Elderly Care & Rehabilitation Clinicians
- Accident & Emergency Clinicians
- South Wales Speed Reduction Partnership
- Fire Services
- The Violence Prevention Group
- Child Safe Wales
- Community Child Health, Geriatric Medicine and Epidemiology & Public Health Medicine Departments in the University of Wales College of Medicine

In conjunction with the availability of injury data from AWISS and other information sources these different collaborating bodies are currently undertaking a considerable amount of research in injury prevention.

The recent development and launch of the Wales Injury Prevention Network [www.capic.org.uk](http://www.capic.org.uk) provides a wealth of information on a wide variety of safety topics to support practitioners who are actively involved in injury prevention initiatives in their local communities.

A focussed effort to reduce injuries can be of benefit to many other policy areas. The National Assembly has a strong sustainable community's policy, which will be assisted by a reduction in accidental injury, especially in socially deprived areas.

Communities First is a practical funded programme which is designed to enable 100 of the most deprived communities in Wales to develop partnerships to pursue sustainable development and tackle social disadvantage at a local level. These communities have much to benefit from injury prevention as they have the highest injury rates.

### **3.3. Examples of Specific Initiatives**

Below are examples of injury prevention initiatives currently underway in Wales. This is not a complete list and we realise that there is much more work in progress, too lengthy to mention here.

### **3.4. Road Safety**

There is statutory provision for road safety in Wales with road safety officers employed in all Local Authorities. The Royal Society for the Prevention of Accidents (RoSPA) has an office in Cardiff, which serves all of Wales on road safety issues. The Road Safety Council for Wales is based in the Cardiff office. It co-ordinates safety campaigns with local authorities across Wales as well as advising the general public on road safety issues. The organisation is supported financially by each local authority and the National Assembly for Wales and membership consists of RoSPA, The British Institute for Traffic Education Research (BITER), local authorities, NAFW and the four police forces.

A considerable focussed effort has gone into road safety with a range of interventions aimed at improving pedestrian safety, including child education campaigns, speed reduction campaigns, traffic calming measures and pedestrian skill courses.

In March 2000 the UK Government, in partnership with the Scottish Parliament and the National Assembly for Wales, published new targets for road safety.

The targets to be achieved by 2010, using the average figures for 1994-98 as a baseline are to:

*Reduce by 40% the number of people killed or seriously injured in road accidents*

*Reduce by 50% the number of children killed or seriously injured*

*Reduce the slight casualty rate by 10%, expressed as the number of people slightly injured per 100 million vehicle kilometres <sup>1</sup>*

A specific road safety strategy for Wales is being produced and is currently out for consultation. It suggests that targets for injury reduction should be set in line with the specific problems experienced in Wales.

### **3.5. Road Safety Initiatives in Wales**

#### *Speed Reduction Partnership*

The South Wales Police area is one of the eight areas in the UK which is involved in a trial of tax hypothecation for injury prevention. Speed cameras have been shown to be effective in reducing speed and injuries. The trial money from the additional fines is being used to increase the number of cameras and signing in order to reduce the injury rate. The partnership involves the police, seven local and two health authorities, and the National Assembly for Wales. Members of CAPIC are involved in an evaluation of the programme which will particularly focus on measurement of factors affecting the effectiveness of mobile speed cameras.

As a result of the success of this pilot project the partnership is being extended to include Dyfed Powys and Gwent and a separate North Wales partnership is has been established since October 2001.

#### *Safe Routes to School*

A number of road safety initiatives have been developed as part of the Safe Routes to School initiative. For example:

- the Walking Bus.
- the Welsh Safe Routes to School Teachers' Resource Packs.
- Maps for children in Newtown which have been funded by Powys and the National Assembly to promote walking and cycling following investment in new cycle routes, crossings and shared use footpaths.
- Cycle proficiency training for year 5 and 6 pupils is carried out by a number of local authority areas in Wales.

### *Belt Up School Kids (BUSK)*

The national campaign, Belt Up School Kids Campaign (BUSK) has Welsh origins and is run from Wales.

### *Home Zones*

Monmouthshire Council has established a home zone in Magor village. Further home zones are planned in Rhos Nathan Wyn, Aberamon and Powys.

## **3.6. Fire Safety**

The number of deaths and injuries as a result of fires in the home has declined in recent years. Much of the decline can be attributed to the increased use of non toxic furniture materials and the use smoke alarms. Home Office figures show that smoke alarm ownership is about 82% and that casualty rates for home where a working smoke alarm is present are around 2-4 per 1,000 fires compared with 8-9 per 1,000 fires in homes where no working smoke alarm is present (Home Office).<sup>16</sup>

The National Community Safety Centre, which operates within HM Fire Services Inspectorate (HMFSI) and the Home Office Fire & Emergency Planning Directorate (FEPD) was established in 1998 following the report to Ministers of the Community Safety Task Force, entitled Safe as Houses (1997).

The aim of the Centre is to take forward the recommendations of the report and develop a co-ordinated approach and sustained national strategy for delivering fire safety education and awareness across the UK. The report made a number of key recommendations, at the centre of which is a shift in primary focus of the service from firefighting to fire prevention. It also recommended that fire safety should become a statutory duty and that the prevention work of the brigades and the Home Office should come together under a single umbrella of programmes and objectives

In taking forward the recommendations the following target has been set:

*to reduce the number of accidental fire related deaths in the home by 20% over 5 years, and to reduce the number of deaths overall.*<sup>16</sup>

There are three fire service headquarters in Wales. Each focuses their work on community fire safety education and supports their local stations.

### 3.7. Fire safety initiatives in Wales

- *The Young Fire-fighters Association (YFA)* teaches young people fire and squad drills, fire safety, first aid and team building exercises. They also take part in outward bound courses, ladder climbs and sponsored mountain climbs. There are plans to introduce a national YFA training manual which will enable cadets to obtain up to four recognised certificates that can be incorporated into their record of achievement folders.
- *North Wales Fire brigade* offers home fire safety checks to all residents in the large towns and communities in their areas. During these visits they are checking the number and age of occupants in the house, whether there are smokers or open fires, whether candles are used and whether plugs are overloaded etc. Advice is given and if smoke alarms are not fitted they are fitted free of charge. This information is being used to build a database, which will profile communities and identify those at risk.
- *Rhondda Cynon Taff CBC* has recently opened the Safety Zone in Pontypridd. This is a purpose built unit, which will provide a permanent site for Crucial Crew events. The South Wales Fire service is providing community fire safety officers at the Safety Zone to deliver fire safety education.
- *The Mid & West Wales Fire Service* has recently developed a mobile unit which contains two rooms. This can be used to demonstrate fire hazards in the home.
- *The South Wales Fire Brigade* has launched an interactive website for schools [www.fire-tan.org.uk](http://www.fire-tan.org.uk).
- A small grant from the Chief Medical Officer to the University of Wales College of Medicine has enabled an *epidemiological profile of domestic fires* to be produced. This study has been undertaken with the assistance of the Mid & West Wales Fire Service and the City and Council of Swansea. The work has now been extended to the rest of Wales and will be used to target and evaluate interventions.
- *The fire awareness child education (FACE) Scheme* uses fire brigade employees working in pairs to visit a child's home and with the family explain what happens in a fire and what serious harm could occur if the fire play does not stop. The child is coaxed into accepting the unforeseen dangers of fire and by a series of workbooks develops a thorough knowledge of how to prevent a fire and protect the family from fire by checking smoke alarms, fire action plans and escape routes. The FACE Scheme is geared to deal with children aged 4 to 10 years; thereafter there are provisions for a more serious fire setter in a separate programme, often working with the Youth Offender Teams.

### 3.8. Home and Leisure Safety

There has been growing concern over the past few years about the increasing number of accidents, which occur in the home, particularly in relation to falls. Young children and older people are at particular risk because of the amount of time they spend in the home environment. A significant proportion of falls in the home in the elderly population are caused by unfamiliar surroundings, ill fitting slippers, poor lighting and poor eyesight.

In contrast to road and fire safety, home safety is not supported nationally with statutory funding.

#### *National initiatives to reduce home and leisure injuries*

- The Department of Trade & Industry (DTI) is running a three year 'Slips, Trips & Broken Hips Campaign' to raise awareness of the number of falls in the elderly and has recently launched a national burns and scalds campaign in relation to home accidents.
- The DTI has also recently launched a grants programme to encourage the development of multiagency home safety initiatives.
- The National Service Framework for Older People has been launched in England and is scheduled for publication in Wales in the near future. The framework incorporates eight standards – one of which focuses on falls. This seeks to prevent falls and reduce resultant fractures or other injuries in older people, and to ensure that people who have fallen receive effective treatment and advice on falls prevention.

### 3.9. Home & leisure safety initiatives in Wales

- In order to focus activity on the reduction of home accidents and injury RoSPA has recently extended its work with the provision of a *Wales Home Safety Advisor*. The aim will be to pull together the many different agencies and groups to provide a co-ordinated approach to reduce the number of injuries which occur in the home environment.
- *The South Wales Scald Prevention Campaign* is supported by The Welsh Centre for Burns and Plastic Surgery at Morriston Hospital, the City and County of Swansea and SWALEC.
- A number of *home loan schemes* have been developed across Wales. They are either run as part of community projects, or have been developed by voluntary agencies, which support families with young children, or they have been developed under the Sure Start scheme.
- *Baby safety packs* for parents of new born babies have been developed under some SureStart schemes.

- *Initiatives to reduce the risk of falls* in the elderly such as rapid assessment centres and pilot programmes for the use of hip protectors have been developed.
- *Free electric blanket testing* and free replacement, together with general safety advice, targeting the over 65s in a number of local authority areas.
- Co-ordinated *research into playground injuries* confirms the benefits of impact absorbing surfaces, which reduce the severity of playground injury. This partnership programme has led to the revision of playground design in Cardiff.
- The Wales Home Safety Council.

### **3.10. Workplace Safety**

Information on the number and pattern of fatal and serious injuries in the workplace are available from the Health & Safety Executive (HSE). Table 1 (page 27) shows the number of fatal and major injuries reported the HSE in Wales from 1996/7 to 2000/1.

**Table 1:** Fatal and major injuries in Wales as reported to HSE(a) 1996/7 to 2000/01 by main industry

| <b>Industry sector</b>                            | <b>Fatal</b> |       |       |       |       | <b>Major</b> |       |       |       |       |
|---|--------------|-------|-------|-------|-------|--------------|-------|-------|-------|-------|
|   | 96/97        | 97/98 | 98/99 | 99/00 | 00/01 | 96/97        | 97/98 | 98/99 | 99/00 | 00/01 |
| <b>Agriculture</b>                                | 3            | 1     | 1     | 0     | 0     | 27           | 20    | 13    | 31    | 12    |
| <b>Extractive &amp; Utility Supply Industries</b> | 1            | 1     | 1     | 0     | 0     | 44           | 48    | 28    | 35    | 34    |
| <b>Manufacturing</b>                              | 7            | 3     | 5     | 3     | 2     | 579          | 648   | 640   | 656   | 544   |
| <b>Construction</b>                               | 4            | 4     | 3     | 3     | 3     | 225          | 253   | 234   | 251   | 186   |
| <b>Services</b>                                   | 6            | 4     | 2     | 1     | 0     | 520          | 648   | 611   | 627   | 573   |

The revitalising Health & Safety Initiative was launched on 30 March 1999 to relaunch and inject new impetus to the health and safety agenda, 25 years after the Health & Safety at Work etc Act 1974. The strategic statement sets its first ever targets for Great Britain's health & safety system:

A new strategy, *Securing Health Together*, which dovetails with Revitalising Health & Safety was launched in July 2000 and sets challenging targets to galvanise activity to improve occupational health. Its targets for achievement are:

- A 20% reduction in the incidence of work related ill health.
- A 20% reduction in ill health caused by work activity to members of the public.
- A 30% reduction in the number of days lost due to work related ill health.
- To ensure that those off work through ill health or disability are made aware where appropriate, of opportunities for rehabilitation into work and/or opportunities to prepare for and find work.

The strategy was launched in Wales in October 2000. The National Assembly for Wales and the Health & Safety Executive (HSE) are working together to improve occupational health in Wales. They have published a concordat on joint working arrangements. An example of the subjects areas covered in the concordat include building control, educational facilities, entertainment facilities, adventure activity centres, food safety, pesticides, occupational health and health promotion.

The strategy provides a wider view of the meaning of health at work and makes an important contribution to the National Assembly's agenda to improve the health of the population of Wales.

As a result of the publication of the Revitalising Health & Safety strategy the following areas have been identified for specific attention:

- Agriculture, including farm workers, self employed farmers and their families
- Construction, including the risk of falling from heights
- Workplace transport, including pedestrian injuries at the workplace and driving in the course of work
- The health services sector
- Slips and trips

### 3.11. Workplace safety initiatives in Wales

- *Health at Work: The Corporate Standard* is a national mark of quality in health promotion in the workplace. The National Assembly for Wales awards it to those workplaces that demonstrate a commitment to improving the health of their workforce. It is endorsed by the Health & Safety Executive, the CGI in Wales and the Wales TUC. The Corporate Standard is a continuous journey of best practice and improvement.
- The Ceredigion Home Safety Team is a multiagency group, which first pioneered *the use of a six figure grid reference to summon emergency aid*. It has also researched agricultural accidents attending Accident and Emergency departments during the period of 1993 - 1998, publishing a report, which analysed 677 accidents. A further 5 year study is underway. Promoting safety messages to primary school children has also been a core feature of the group.
- The *Powys Prevention of Agricultural Injuries Group* aims to reduce the number of preventable farm related accidents. There are two project workers who work in Montgomeryshire and Brecon and Radnor. Farm safety messages are promoted through schools, youth groups and farmers groups.
- The Institute of Rural Health is undertaking a *research project Farm Child UK that is looking at the health of children who live on farms*. This includes childhood injuries.
- The Health & Safety Executive in Wales is supporting *the Safety Zone* in Treforest. A set to teach children about farm safety is included on the site and is manned by staff supplied by HSE.

## 4. EVIDENCE OF EFFECTIVE INTERVENTION

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### 4.1. Introduction

To have maximum impact any proposed intervention should be based on practice, which has previously been shown to be effective. Below is a short synopsis of interventions, which have been shown to be effective in reducing injuries. For more detailed information readers should refer to the recent review by Elizabeth Towner<sup>17</sup> and the Cochrane Library Reviews ([www.cochrane.org](http://www.cochrane.org)).

### 4.2. Home & Leisure

#### *Burns & Scalds*

Educational campaigns have been partially effective in increasing knowledge of burn and scald prevention. Safe home and product design have been associated with reductions in specific burn and scald injuries. There is little evidence that educational approaches alone have achieved any reductions in burn and scald injuries.<sup>17</sup>

There is some evidence that smoke alarm give away programmes can achieve reductions in fire injuries.<sup>18 17</sup>

Participatory interventions, which teach children how to react in a smoke filled room, can be effective.<sup>19</sup>

#### *Poisons and Medicines*

Child resistant packaging of medicinal and other dangerous substances is effective in reducing poisoning injuries and death.<sup>17.</sup>

Interventions to increase the safe storage of non medicinal poisons may be an effective means of preventing poisoning injury. However, more evidence is needed.<sup>17</sup>

#### *Sports & Leisure*

Interventions to promote safety in the leisure environment has produced positive results. There is some evidence that interventions to reduce injuries in the leisure environment have resulted in reduced numbers of injuries (including fractures).<sup>17</sup>

Playground hazards have been reduced following interventions in schools.<sup>17</sup>

In many sports the risk of injury has been reduced by rule changes or by the use of protective devices.<sup>20</sup>

Inline skating studies show that wrist protectors can significantly reduce the risk of fractures. It is also recommended that skaters wear knee/elbow pads and a helmet.<sup>21</sup>

There is some evidence that rubberised impact absorbent surfacing is associated with a reduced rate of injuries. Reducing the height of monkey bars also reduces injury.<sup>22</sup>

#### *Falls in older people*

There is compelling evidence for the efficacy of calcium and vitamin D supplements as a means of fracture prevention in frail elderly people. Simple supplements given to people in institutional care can reduce the risk of hip fracture by a quarter.<sup>23</sup>

In people with osteoporosis the use of a large number of drugs can improve hip fracture risk. For instance, bisphosphonates such as alendronate and risendronate can halve patients risk of future fracture.<sup>24</sup>

Hip protectors (padded shields worn over the hip bone) may reduce the risk of hip fracture in some situations – they are especially useful in people who are frightened of falls and fractures, and may be helpful as a way of protecting frail confused people who have suffered recurrent falls.<sup>25</sup>

Assessment of residents in residential care after a fall with development of individual treatment plans and staff education decreases falls – for instance withdrawal of psychotropic medication is likely to be beneficial.<sup>23</sup>

Multidisciplinary programmes screening for and modifying multifactorial, health and environmental risk factors, are likely to be effective<sup>23</sup> both for unselected community dwelling older people and for older people with a history of falling, or identified as being at risk of falling.

A programme of muscle strengthening and balance retraining, individually prescribed at home by a trained health professional is likely to be beneficial for older people.<sup>23</sup>

Exercise programmes such as Tai Chi delivered by a qualified professional reduces the risk of falls in selected high risk of older groups of people living in the community.<sup>23.</sup>

### **4.3. Road**

#### *Modification of environment*

There is good evidence that area wide engineering schemes and traffic calming measures reduce accidents. The introduction of 20mph speed limit zones in parts of the UK resulted in local reductions in child road accidents involving cyclists of 48% and a reduction of 70% in child road accidents involving pedestrians.<sup>17,26</sup>

There is some evidence that cycle tracks reduce some cycle injuries but more research is needed in this area.<sup>17</sup>

Safer design of roads and roadside environments will reduce injuries.<sup>27</sup>

Provision of school crossing patrols can reduce the rate and severity of childhood accidents.<sup>27</sup>

### *Pedestrian Training*

Pedestrian skills training programmes have been shown to improve children's skills, both for individual skills such as timing and finding safe places to cross and a combination of skills, provided that they are specifically targeted. However, no good quality studies have shown that pedestrian skills training has reduced children's injuries.<sup>17</sup>

Children's traffic clubs. Studies using age paced materials to promote parental teaching have shown good evidence of behaviour change of parents and children and have demonstrated some evidence of casualty reduction, but more evidence is needed.<sup>17</sup>

There is some evidence that bicycle training schemes can improve safe riding behaviour.<sup>17</sup>

### *Safety Equipment*

Bicycle helmet education campaigns can increase the use of cycle helmets and helmet discount schemes. Give away programmes facilitate increased uptake and use.<sup>17</sup>

Cycle helmet legislation has been associated with injury reductions. However, legislation may discourage child and teenage cyclists.<sup>17</sup>

The loan of car safety seats appears to be an effective strategy to increase the numbers of children transported safely in cars.<sup>17</sup>

Educational campaigns appear to be an effective means of increasing the number of babies and children restrained in cars. More intensive programmes are associated with more positive results. However, initial gains may not be sustained in the longer term.<sup>17</sup>

Campaigns aimed at increasing seat belt use in older children have had mixed results; teenagers seen least amenable to change.<sup>17</sup>

### *Enforcement*

Legislation requiring restraint of children in cars is associated with reductions in injury and death.<sup>17</sup>

Enforcement of car passenger restraint legislation has achieved some increases in observed restraint use.<sup>17</sup>

There is some evidence that education/enforcement aimed at the driver reduces accidents and injuries.<sup>17</sup>

Stricter enforcement of speed limits will result in fewer injuries.<sup>30</sup>

### *Drink Driving*

Remedial interventions with drink/driving offenders can reduce recidivism and alcohol related crashes.<sup>28</sup>

Avoiding alcohol before driving prevents car crashes. Excess alcohol is involved in 20% of all traffic-related deaths.<sup>29</sup>

Random breath testing has been shown to reduce road traffic injuries.<sup>30</sup>

#### **4.4. Multifaceted Approaches**

General mass media campaigns and training events have been shown to increase safety knowledge but there is no evidence that they lead to a reduction in child injuries.<sup>17</sup>

Community based approaches with long term strategy, focussed leadership, multi agency collaboration, involvement in the local community, appropriate targeting and time to develop a range of local networks and programmes allow injury prevention messages to be repeated in different forms and contexts.<sup>17</sup>

#### **4.5. Workplace**

Legislative measures to improve workplace safety in general have led to a reduction in injuries in young people.<sup>31</sup>

## 5. THE WAY FORWARD

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### 5.1. Introduction

Preventing injury is a remit, which falls on very many bodies and individuals. However, in any one organisation there are usually only a few people whose primary role lies in injury prevention. These people are very often professionally and geographically isolated and their roles are compromised by lack of access to data on injury occurrence, evidence of effectiveness and the mechanisms to actively influence injury prevention policy and practices. This is a situation which is not unique to Wales but is widespread throughout the United Kingdom.<sup>32</sup> Indeed, Wales is considerably further ahead than many countries with the development of the Collaboration in Accident Prevention and Injury Control.

The British Medical Association Board of Science and Education recently reviewed the situation in the UK and produced a report on preventing injuries.<sup>33</sup>

They recommend that injury prevention should be recognised as one of the major public health priorities in the UK. Their recommendations are reproduced below.

### 5.2. Injury Surveillance

- Injury surveillance centres should be established in each UK home country with a remit to collate, interpret, add value to, and disseminate injury statistics across relevant stakeholders; these surveillance centres should also have a remit for research and development of new methods of surveillance of injuries and injury risk prevalence.
- The concept of “injury” rather than “accidents” should be recognised by the Department of Health and the NHS. The definition of injury and methods of recording data nationally require a consensus from all stakeholders to include hospital departments, police road traffic accident reports, fire services, the Health and Safety executive and others.
- The health sector should adopt a primary role in the collection of high quality data on injuries and their consequences.
- A comprehensive injury surveillance system should include data from surveys (especially of vulnerable groups) of exposure to known avoidable hazards (e.g. dwellings without functioning smoke alarms, child pedestrian exposure to non-traffic calmed roads) and of the population at risk of specific injuries (e.g. kilometres cycled per person).

- Injury surveillance should include an account of the population prevalence of injury disability. Future national sample surveys of morbidity and disability should clearly identify those cases attributable to injury (preferably linked to detail of the original injury event).
- Existing data systems concerning injury maintained by separate agencies should be enhanced and co-ordinated.
- The accident and emergency minimum data set should be made mandatory and be consolidated into an accessible national database. Data collection in primary health care should also provide an important subset of the overall picture since minor injuries frequently present in general practice settings as well as accident and emergency units.
- The national sample system of accident and emergency attenders with home and leisure injuries run by the Department of Trade and Industry (HASS/LASS) should be extended to cover all injury types regardless of circumstances or intent.
- National data concerning road traffic accidents (STATS 19) collated by the Department of the Environment Transport and the Regions should be developed to include a standardised definition of injury severity and be linked to accident and emergency departments.
- Data from coroners' inquest reports relating to injury should be compiled into an anonymous standardised national database.
- Each of these injury surveillance systems should include coding of injury circumstances using ICD cause codes and a measure of injury severity using the injury severity score.
- Consideration should be given by the government to placing a levy on insurance companies to fund research into accident prevention and interventions, and for insurance companies to provide mandatory anonymised reports about all personal injury claims in order to assist in injury surveillance. Investigations should be conducted to ascertain how this can be successfully achieved and implemented as policy.

### **5.3. Research and Development**

- The total research spending on injury should be increased to a level commensurate with other major public health problems and positive discrimination should be exercised to balance the lack of charitable and private resourcing. A comprehensive, public, and fully costed account should be kept of all research on injury (public and private/voluntary funded).
- Systematic efforts are needed to improve the evidence base for effective injury prevention, especially for neglected areas such as intentional injury, sports injury and falls and to ensure that any widely implemented injury prevention actions for which there is no current evidence of effect are subject to urgent formal trials.

New research strategies are needed to:

- Extend the evidence base for effective injury prevention to include details of cost-effectiveness.
- Understand and reverse social inequality in injury risk.
- Develop a national plan for multi-disciplinary injury prevention research including research councils, government departments and other major research funders.
- There should be several multi-disciplinary injury research centres based in UK universities, covering between them the full range of injury by age group intent and injury phase from prevention through to rehabilitation.
- The work of and data emanating from the present and former public research laboratories (health and safety, transport research, fire research, building research) should be linked to multi-disciplinary injury research centres.

#### **5.4. Implementation and Strategic Policy Development**

- Co-ordinated multi-sectional action should be focused on the full implementation of those few injury prevention methods for which there is strong evidence of effect (e.g. car occupant restraints, traffic calming, road speed limit enforcement, smoke alarms, and child proof closures).
- Further effort is needed to identify and eradicate avoidable mortality and morbidity due to inadequacies in trauma management.
- A programme budget should be developed to describe the extent of public investment in safety and injury prevention for comparison with other major public health programmes and for audit against cost-effective best practice.
- The NHS should increase its commitment to health impact assessment and to enforcing health and safety legislation especially by:
  - encouraging systems for managing health at work
  - developing occupational health services and competencies
  - improving data on occupational disease and injury
  - promoting health and safety in the workplace

- An accurate account should be created of the burden of injury versus other major public health threats in the UK using internationally recognised methods such as Disability Adjusted Life Years (DALYs).
- The four UK health administrations should jointly review and compare the resources and priorities that they give to injury prevention and identify any specific approaches that have been shown to be effective.
- A national agency should be established in each of the four home countries following a process of consultation and review with all interested stakeholders with the following remit:
  - establish a single over-arching national body for injury prevention and control working in partnership across government departments.
  - co-ordinate initiatives across all forms of injury, age groups, and at all levels.
  - be responsible for establishing national injury surveillance systems.
  - commission several multi-disciplinary academic research centres.
  - develop a national strategic plan for injury prevention.
  - be answerable to a single responsible government minister.

The above recommendations are also supported in a recent national survey of health authorities in England<sup>32</sup>, which calls for:

- National action to improve the data situation, which includes highlighting good practice at local level and taking steps to improve the consistency and monitoring of data.
- Further investigation of resource issues so that precise gaps and sources can be located. Particular attention should be given to the issue of local co-ordination.
- Production of a new accident prevention guide for health authorities, and possibly Primary Care Groups and Primary Care Trusts that includes key areas such as partnership work, strategy, resources and monitoring and evaluation. The guide could be used to promote action and evidence based practice.
- The present research should be repeated in 3-5 years time both to monitor progress and to identify any new areas that may need attention in order to achieve the new targets for accident prevention.

## 5.5. Setting Targets and Monitoring Change

Setting appropriate targets for the reduction in injuries is an extremely challenging and difficult task. Targets can have the effect of motivating individuals and organisations if there is a realistic possibility of implementing interventions which are likely to bring about positive change. On the other hand targets are often set without a full appraisal of the factors behind the current situation, the scientific basis for beneficial interventions and the capacity of organisations to implement change. In such circumstances targets can be disempowering and unhelpful. Different countries have taken a variety of approaches to target setting with some setting specific figures to be achieved in a defined timeframe whilst others are more aspirational in approach. For instance, Sweden has set a zero vision approach to road traffic related injuries, with the aim of eliminating all such injuries. We have not spent much time considering specific targets for a multitude of injury types and client groups. A large number of targets are likely to detract attention from a small number of very important issues. Considering the information presented on the scale of the injury problem in Wales and the evidence for effective interventions we believe that two of the priority areas for prevention should be:

- A. *a reduction in inequalities in the rate of pedestrian injuries in children in the most affluent and deprived fifths of electoral divisions across Wales*
- B. *a reduction in the number of falls and fractures suffered by older people across Wales*

The first of these represents the most important inequality in health in our society. Interventions to reduce pedestrian injuries should be preferentially targeted at less affluent areas of Wales, taking into account the spatial distribution of pedestrian injuries. Progress towards the goal of eliminating inequality could be monitored through the police Stats 19 data, accident & emergency and in patient data.

The second priority represents the single greatest injury challenge for Wales. Interventions to reduce falls and fractures in older people are applicable to the entire population and will be addressed in the forthcoming National Service Framework for Older People.

There are a large number of other areas where there is the scope to intervene to reduce injuries. These areas will be reviewed on an ongoing basis by the Collaboration and other bodies. Interventions to reduce all injuries will continue and the focus of these interventions will depend on the specific remit of a wide range of agencies across Wales.

## 6. THE IMPLICATIONS FOR WALES

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We support the recommendations of the BMA Board of Science & Education and recommend that injury prevention should be recognised as one of the key major public health priorities in Wales.

It is clear that the development of the Collaboration for Accident Prevention and Injury Control has already had a considerable impact on injury prevention activities in Wales. However, if we aspire to be a world leader in injury prevention then several additional steps should be taken. These steps relate to better information on the scale and distribution of injuries in Wales, more effective inter-sectoral working, and enhancing the research capacity in Wales to test and evaluate new interventions and better methods of applying existing knowledge.

### *Better information*

A national injury surveillance centre should be established to bring together data on injuries from a wide variety of sources. Such a centre could be established as a partnership between the Wales Centre for Health and the University of Wales College of Medicine. Staff at UWCM have considerable experience and international recognition in this field, having developed the All Wales Injury Surveillance System (AWISS) and pioneered collaborative working and analysis of police and fire service injury data.

The provision of data to AWISS should become mandatory. AWISS is recognised as a National Database by the Assembly and is supported by all the accident and emergency departments in Wales. However, some hospitals do not supply data. This situation hampers injury prevention initiatives in some parts of Wales.

### *More effective intersectoral working.*

Many agencies play individual key roles in injury prevention, but much more can be achieved when agencies share information and co-operate in mutually beneficially interventions. The Collaboration in Accident Prevention and Injury Control (CAPIC), supported by a development grant from the Assembly, has started to unleash the hidden potential in multi-agency injury prevention initiatives. Wales could lead the world in this field. The Assembly should consider formalising the role of CAPIC as the Wales Injury Prevention Network, perhaps as part of the Wales Centre for Health, and supporting multi-agency injury prevention initiatives on an on-going basis.

*Enhancing research capacity.*

There are many promising interventions which could reduce the occurrence or severity of injury but which require rigorous evaluation. Often these interventions are quite complex and require quite large numbers of people to determine the magnitude of the benefits. The National Assembly distributes large amounts of money to local authorities and others for a variety of reasons including injury prevention initiatives. It is often not possible to evaluate the effectiveness of these initiatives due to small sample sizes in individual authorities and a lack of research capacity.

The National Assembly could ensure that Wales leads the world in the evaluation of these interventions by ensuring that these initiatives are accompanied by a thorough evaluation carried out by a Welsh academic unit. Consider an example where local authorities are given a grant of, say, £50,000 to improve the situation in two deprived areas. A simple before and after evaluation in any one place will be open to multiple interpretations and may have too small an effect to measure.

An alternative strategy would be to facilitate a partnership study involving the Assembly, local government and an academic unit, in which local authorities nominated several areas to be randomised into first or second phase interventions, and data from all 42 areas combined in an analysis. The results would be much more valuable for all involved and would enhance the reputations of the Assembly, local government and academic bodies. Wales would become the place where multi-sectoral interventions are properly evaluated.

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